Simple Solutions for Floor and Ground-Level Work

The Problem

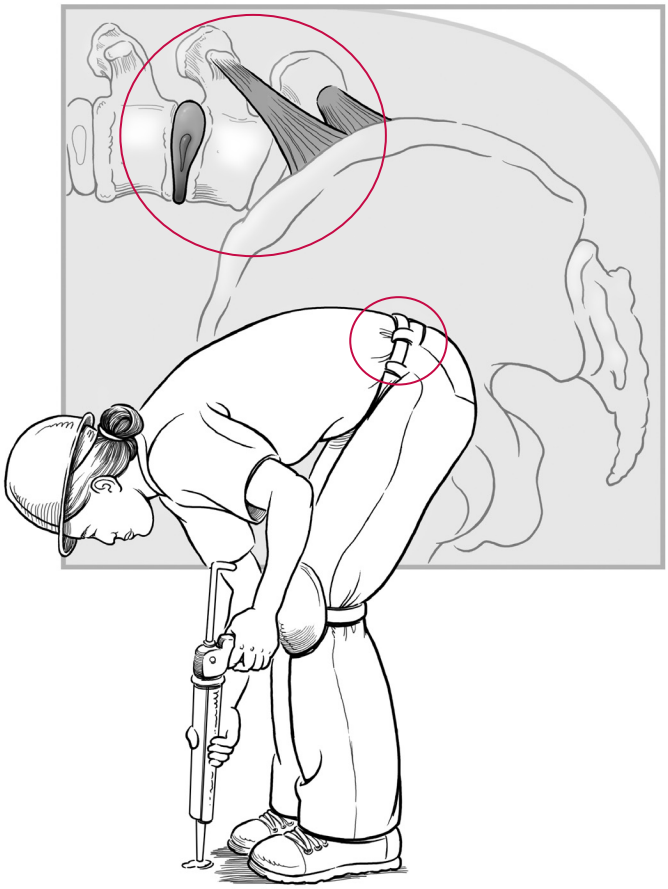
On some construction jobs you need to work close to the ground or floor. For example, you may have to stoop or kneel when installing or finishing slabs, decks, or floor coverings.

Bending, stooping, kneeling, or squatting can cause pain in your lower back or knees. Over time you may develop a serious muscle or joint injury. Your risk is higher if you stoop or kneel often or for long periods of time. It is also higher if you twist your body while working in these positions.

These positions can also make it harder to do your job. When stooping or kneeling, you can't lift, push, or pull as much weight without putting stress on your body.

Injuries & Disorders

Below are some of the injuries you may develop when you work at floor level.



Lower back. Your spine runs from the top of your neck down to your lower back. It is made up of many bones called *vertebrae,* one below another. Between the vertebrae are *joints* and *discs*. These give your back flexibility so it can move. The discs are flexible because they have a substance like jelly inside.

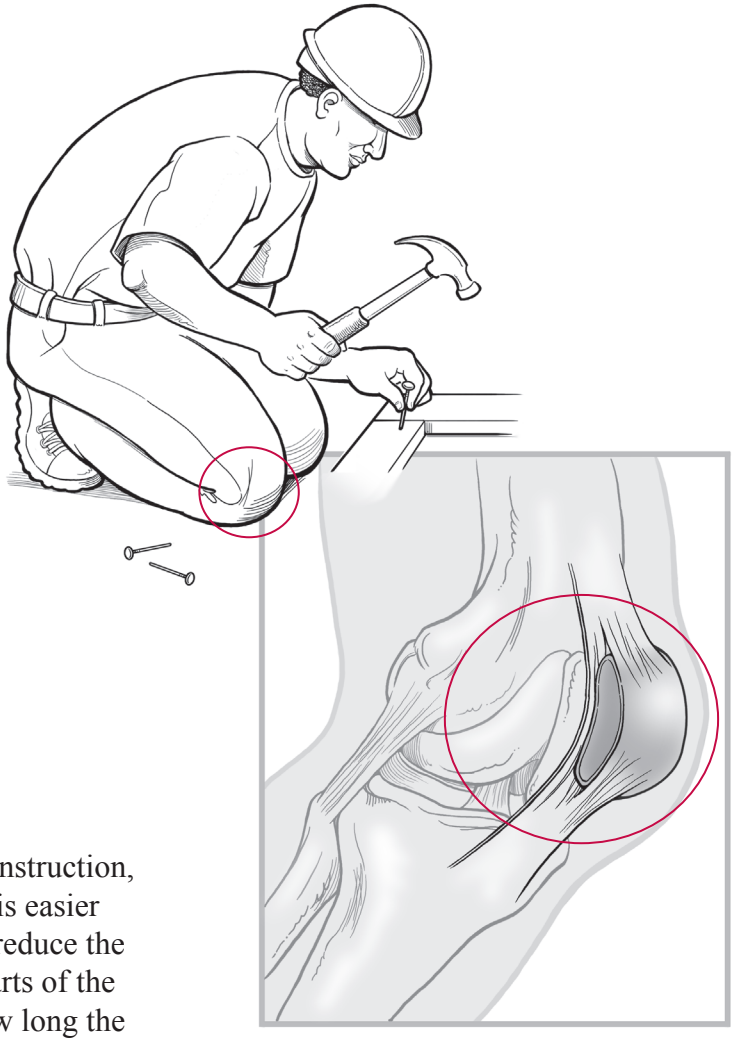
When you bend forward, your back muscles work harder and the *ligaments* (long fibers supporting the back muscles) flex and stretch. The discs get squeezed. As they are squeezed, they can press on different parts of the spine, including nerves. This can cause back pain. If you bend forward over and over for months or years, the discs are weakened, which may lead to disc rupture (or "herniation").

Twisting your body while bending puts even more pressure on the discs, and more stress on the cartilage and ligaments, especially when you are exerting force to lift, push, or pull objects.

Knee. The muscles in your knee are connected to your leg by *tendons*. Between the tendons and bones are small sacs of fluid called *bursa*. They lubricate the knee so it moves easily.

Continual stress on your knee can cause the bursa to get squeezed, swollen, stiff, and inflamed (*bursitis*). This stress can also cause the knee tendons to become inflamed, resulting in pain (*tendinitis*).

Tasks that involve frequent stooping, kneeling, or squatting increase your risk of developing bursitis, tendinitis, or arthritis in the knee. The risk of arthritis increases for workers who already have had a knee injury and work in these positions.



Some Solutions

Floor-level work cannot be eliminated from construction, but it is possible to change how you do it so it is easier on your body. Solutions are available that can reduce the level of stress on your back, knee, and other parts of the body. They may also reduce how often and how long the body is subjected to this stress. Many of the solutions can also eliminate other potential safety hazards and increase productivity.

The type of task and the site conditions will determine which solutions are best for you. A few possible solutions for specific floor-level tasks are explained in Tip Sheets #1–5.

General solutions for doing floor-level work with less risk of injury include:

Change materials or work processes. One of the most effective solutions may be to use materials, building components, or work methods that are less labor-intensive, so the task takes less time and you therefore kneel and stoop for a shorter period. Because there may be cost, contract, and engineering issues involved, an individual construction worker or subcontractor usually cannot make a decision like this. Changes may require the approval of the architect, engineer, building owner, or general contractor.

However, individual workers often *can* change the way they do the work. Sometimes people work on the floor because it is the only large flat work area available. The floor is used as a workbench for assembling, mixing, or other tasks. This is common, for example, when assembling sheet metal ducts or building rebar cages. This increases the amount of stooping or kneeling that is necessary. Rather than stooping to the floor, try to raise the work to waist height using tables, sawhorses, or other equipment. It is possible to make your own improvised workbench out of materials you have available.

Change tools and/or equipment. For example, use tools with extension handles that let you stand up while doing a floor-level task. In a few cases, cost and site conditions may restrict the use of such tools.

Change work rules and provide training. Contractors can set site rules that require the use of benches, tables, or sawhorses to raise the work up so less kneeling and stooping are necessary. Rules can also require that materials be stored off the ground. Limits can be placed on the total time that workers do floor-level work without a break. In cases where kneeling on a hard surface cannot be avoided, knee pads or some other type of padding should be used. Also, a policy of providing ergonomics training may help workers more quickly identify potential problems and find effective solutions.

Example: Gurney converted to work table